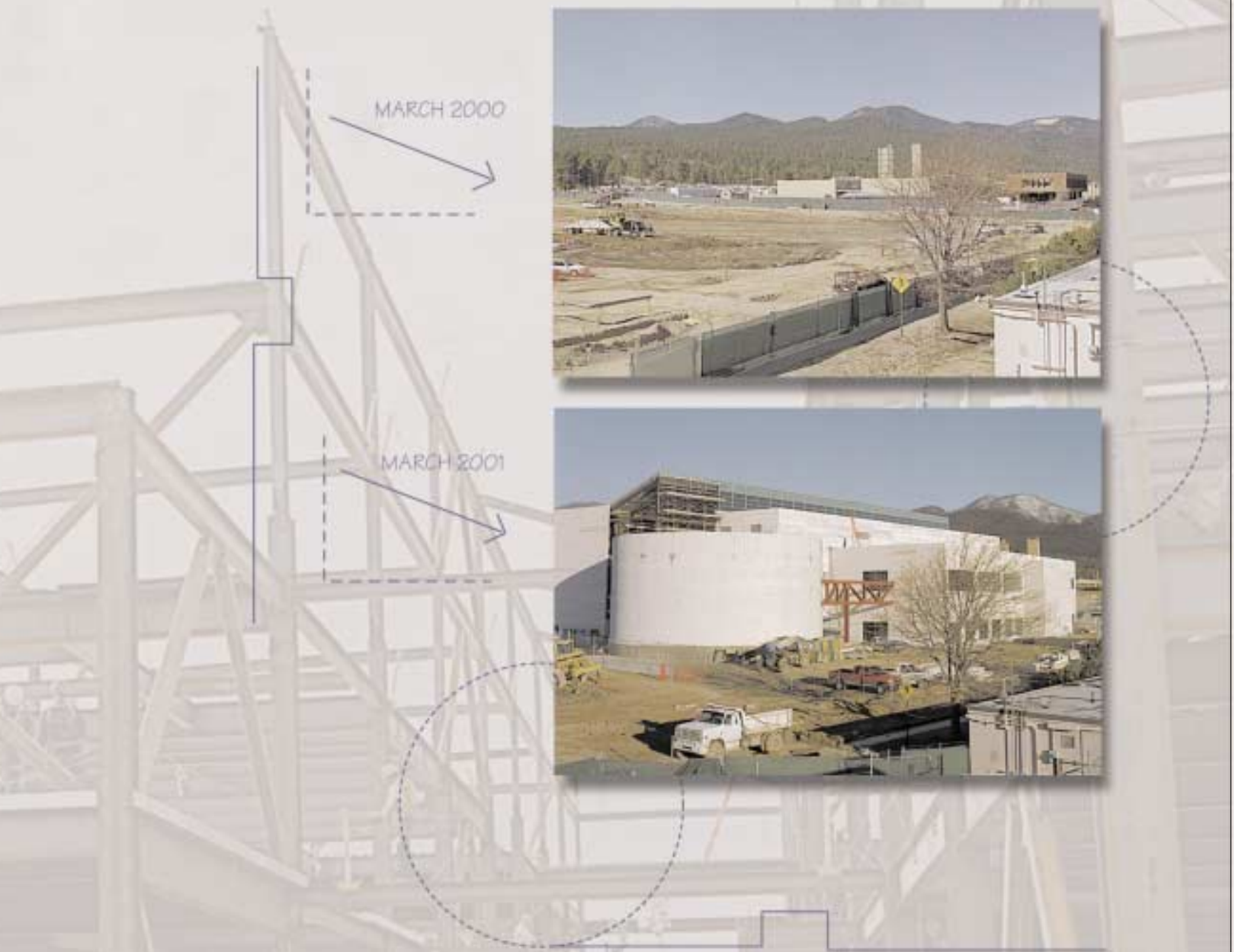
BITS

computing & communications news

Los Alamos National Laboratory



April 2001

This fisheye lens photo, taken by Presley Salaz of the IM-4 Photography Team, was taken from the third floor of the Strategic Computing Complex in February 2001. The center of the photo, looking east to west, shows the floor of the computer room with fresh snow because the structure's roof was not yet completely enclosed.

About the front cover: Dramatic construction progress of the Strategic Computing Complex (SCC). The inset photos, both taken from the roof of TA-3, Building SM-28, show progress from late February 2000 (top inset taken by Mike O'Keefe) to March 2001 (lower inset taken by Presley Salaz). Both inset photos show the Public Affairs Building (SM-100) in the lower right corner. John Flower took the background photo in September 2000. Looking from north to south, the photo shows the steel beam construction. The lobby of the future SCC is on the right side of the photo (covered partially by the inset photos). All photographers are from Imaging Services (IM-4) Photography Team.

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The Strategic Computing Complex: A Project That's Ahead of Its Time and Below Its Budget

by Betty Katz, Communication Arts and Services, IM-1

A visitor to the LANL Strategic Computing Complex (SCC) construction site is first impressed with the size of this gigantic building. But even more amazing is the news that this huge project is 10 percent ahead of schedule and 8 percent under budget. Project Director John Bretzke cites several reasons for this good news: "The biggest thing is not to change the project scope. We defined things in the beginning. Plus, we have a great partnering relationship with the contractor, Hensel Phelps Construction Company of Austin, Texas. We are on the site daily, know each other's problems, and help each other get through."

Building Without Bureaucratic Tangles

John notes that the system has been supportive. "The DOE, the user community, and the oversight people have worked with us to get things done on a timely basis with no bureaucratic tangles. We have tried to communicate frequently and extensively with all parties. We send monthly messages to the TA-3 community. We have been a great disruption to TA-3. They have been very supportive and have acknowledged that to have this type of improved facility, you have to go through some pain to get there."

The term "improved facility" is a classic understatement. The SCC will be a three-story, 291,000-square-foot structure. The supercomputing room that will house the world's largest and most capable 30-TeraOps computer will be 43,500 square feet. This great room will also be able to accommodate the even larger 100-TeraOps computer scheduled to be operational in the year 2004.

Far Beyond a Computer Center

Yet, Don McCoy, program director of Nuclear Weapons Simulation and Computing, emphasizes that the SCC is much "more than a computing center. The SCC is an integrated facility designed as a very powerful user site or as a "collaboratory" where people can interact, see, and understand." Don notes that this integrated facility will accommodate not just CCN and X Divisions but ten Laboratory divisions will have permanent offices in the complex.

The SCC, according to Don, "represents the computational future of the Lab." On any given day, very large computers will be supporting the stockpile stewardship mission of the Laboratory. Teams of application developers, nuclear weapons designers, computer scientists, code developers, and university and industrial scientists and engineers will be conducting stockpile stewardship simulation and analysis, as well as analyzing, visualizing, and understanding these simulations.

These team members will work together with support personnel in simulation laboratories (approximately 200 in classified areas and 100 in unclassified areas). Each simulation lab will have four computer workstations with a standard furniture arrangement. Security requirements have been integrated into the design.

The five areas designated as "collaboratories" will promote interactions among these teams and will offer users, code developers, and managers an informal, information- and technology-rich environment with systems for simulation development, presentations, and problem analysis. The collaboratories will contain conference space as well as a media-stack that includes laser-disk recorders for animation productions and viewing, an immersadesk for compact virtual reality analysis, multiple high-resolution graphics heads, electronic white board, video teleconferencing tools, and electronic collaborative tools.

In addition, the SCC has a visualization environment consisting of two immersive theaters, one in the classified area and the other in the unclassified area. These theaters will have overhead projection and wraparound features to support the latest virtual reality and visonarium environments.

These two immersive theaters represent the highest-end capability available for data viewing analysis.

A powerwall theater in the secure environment will provide high-resolution interleaved displays that fill a wall with the latest projection technology. This theater will also contain conference capability, multiple display monitors, and electronic white boards for teaming and for collaborative discussions.

The scale of the supercomputing room is so large that it is hard to see someone across the soccer field-sized space. Designing the infrastructure for such a large site has involved unique challenges. The ventilation and cooling systems as well as the fiber optic cabling have to support multiple technologies. As a result, the equipment in the SCC must be scalable, that is modular and expandable to meet the ever-changing demands of these developing technologies.

As requirements go beyond the 30 TeraOps capability, mechanical and electrical equipment can be added as required. Scalable features of the SCC include future installation of chillers, cooling towers, computer-room air-conditioning units, substations, motor-generator power conditioners, transformers, and panel boards.

Scalability provides the cost-effective option of not installing additional support technology until it is needed. It also offers the chance to capitalize on advances in computing technology and support equipment.

Building a Hotel for Computer Customization

CCN and X Divisions as well as Accelerated Strategic Computing Initiative (ASCI) have been intimately involved in the SCC design process. ASCI has been responsible for outfitting equipment and computers and installing visualization technology. The computer and simulation equipment housed in the SCC will be funded by the ASCI Operations and Maintenance Program.

As John Bretzke explains, “We are building a hotel for computing customization.” John has not done a large project like this before. He spent the first 17 years of his career on the nuclear side of the business. Nevertheless, he has accomplished an amazing feat. The construction phase of this huge project will be completed in the fall when Laboratory Security will move in to set alarms and other security devices. The complex will be a classified facility in mid-December when the scene will be set for employees to begin moving in.

Putting Safety First

The project has compiled an amazing safety record that was perfect for 560 days of construction until one lost workday injury reset the safety clock to start counting from zero. This record is even more astounding when one realizes that on any given day up to 280 people are working on the construction site and the possibilities for tripping, falling, or lacerations are always there.

Even this year’s series of snowstorms did not affect the safety record or schedule. As one weekly project update indicated, the Hensel Phelps Construction Company took a number of steps to minimize the impact of the weather. The company enclosed certain areas and heated them to allow temperature-sensitive activities to continue. A snow removal crew focused on certain areas to keep progress moving forward, and lots of salt and sand were used to reduce slipping hazards. The snow and cold were something to manage, but they did not put a significant dent in the rate of progress.

When John Bretzke says that the SCC is a “different kind of project,” he is indulging in characteristic understatement. And when he comments that the visitors he escorts on almost daily tours of the facility show “a good, general interest,” John is displaying the kind of cool-handed management approach that has allowed this giant undertaking to be ahead of its time and under budget.

CRC Handbook of Chemistry and Physics Available Online

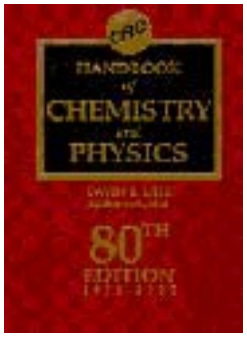
by Marie Harper, STB-Research Library

CRC Handbook of Chemistry and Physics is now available at the desktop, at http://www.hbcpnetbase.com. Under the Library's subscription, LANL staff does not need to Log on; just click on the image of the cover.

The handbook has all the most frequently used data in science. The Table of Contents indicates the handbook's coverage:

1. Basic Constants, Units, and Conversion Factors
2. Symbols, Terminology, and Nomenclature
3. Physical Constants of Organic Compounds
4. Properties of the Elements and Inorganic Compounds
5. Thermochemistry, Electrochemistry, and Kinetics
6. Fluid Properties
7. Biochemistry
8. Analytical Chemistry
9. Molecular Structure and Spectroscopy
10. Atomic, Molecular, and Optical Physics
11. Nuclear and Particle Physics
12. Properties of Solids
13. Polymer Properties
14. Geophysics, Astronomy, and Acoustics
15. Practical Laboratory Data
16. Health and Safety Information

Click on the plus signs in the table of contents to browse. Or, use the search box at the top, or Advanced Search, to search by words in the text or by categories.



IEEE and IEE Conferences Full-Text Now Available from the Research Library!

by Carol Hoover, STB-Research Library

IEEE and IEE conferences are now available full-text at your desktop. The Research Library has provided full-text access to all IEEE sponsored and cosponsored meetings, and IEE meetings, held throughout the world from 1988 to the present.

The following features are available: all abstract and full-text is searchable, full-page PDF images, and multiple search options. The IEEE/IEE conferences are part of Science Server® at LANL at http://sciserver.lanl.gov/cgi-bin/sciserv.pl?collection=confs and are also searchable through links in the library's databases and in FlashPoint (http://flashpoint.lanl.gov), our multidatabase search tool. Send comments or questions to: eteam@lanl.gov .

My Library @ LANL

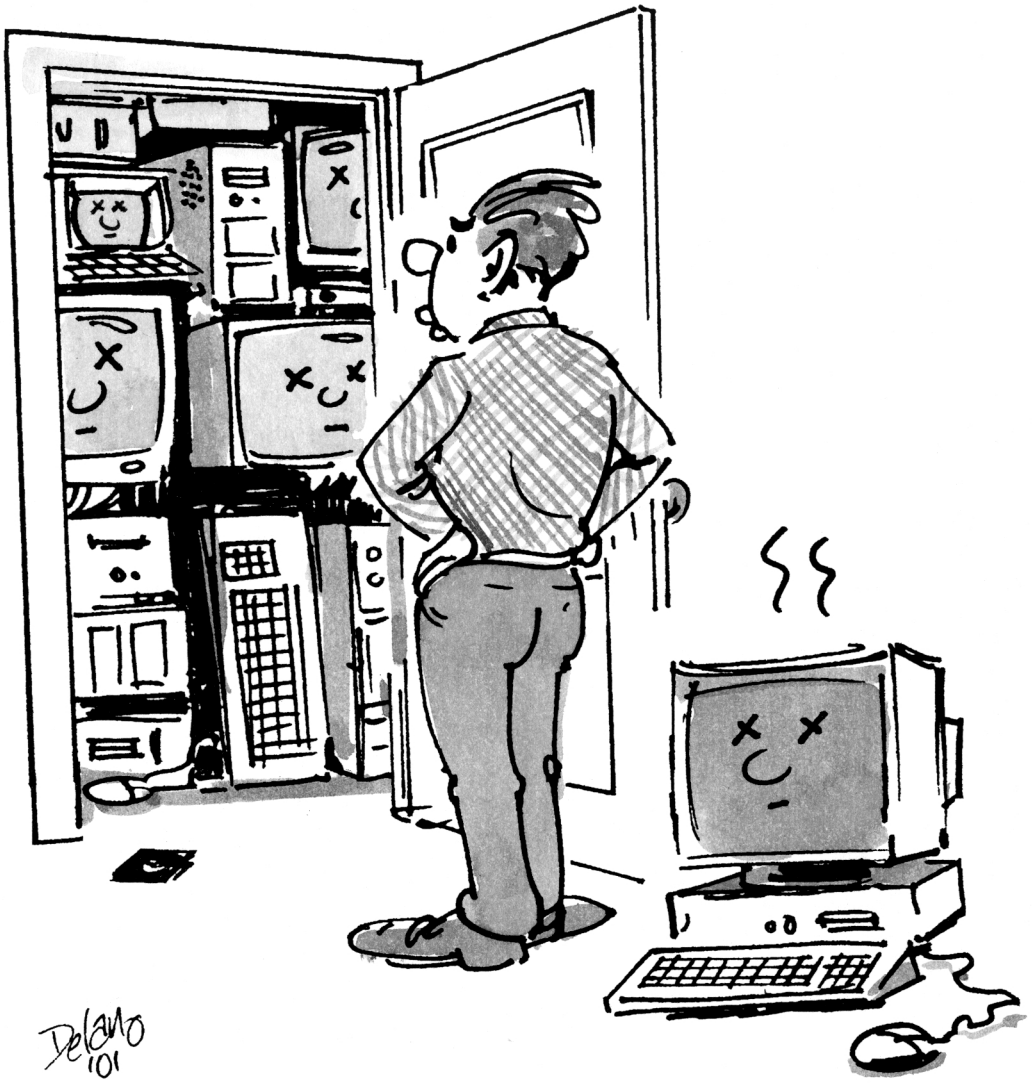
by Frances Knudson, STB-Research Library

Need a place to organize your links for electronic journals, database search engines, news Web sites, or just Web sites that you visit repeatedly? You need MyLibrary @ LANL (http://mylibrary.lanl.gov).

MyLibrary @ LANL is a personalized Web page service. It is a collection of personal links to electronic journals, databases, and other Web resources. It can be customized to reflect specific disciplines and research needs.

You can select from a subset of the 3500+ electronic journals, 200+ electronic databases, and 400+ subject-based Web links from the Research Library's Web site. You also have the option of adding your own preferred Web links easily by clicking a bookmarklet on the personal toolbar of your browser.

Please try this new and exciting Research Library product, and send your comments to stbrl-mylib@lanl.gov. We have begun the process to determine new features for the next versions and your input is invaluable.



Oxford English Dictionary Available Online!

by Marie Harper, STB-Research Library

The Oxford English Dictionary (OED) is now available electronically for LANL researchers at http://dictionary.oed.com/.

For more than a century, the OED has been the undisputed authority of the history and development of the English language. With more than 2.5 million quotations illustrating how words are used, the OED is a unique source of information on the evolution of words and meanings, from the earliest times to the present day.

The searchable version of the OED allows you to search a word not only by its entry term (similar to the alphabetical arrangement of the 20-volume printed set), but also by any part of the full-text entry: the definition, etymology, usage date or the quotation author, document title or text term.

For an overview of the online dictionary's capabilities, enter the site (lower left of entry screen), then use the search function (again, the lower left of the screen) and type in the word 'alamos' for its various entries.

"Content Is the Hero" in LANL's External Web Pages

by Betty Katz with Katherine Norskog, Communication Arts & Services, IM-1

Thanks to the design talent and hard work of the Laboratory's External Web team, there is now more information and greater "functionality" on the Lab's newly designed external Web pages. In reviewing http://www.lanl.gov/worldview, a nationally known Web design expert had high praise for the pages. He noted that the LANL design is "very attractive, very easy to use, and makes your content the hero." This Web expert goes on to say that the pages "invite you in, and once you're in, it's easy to find your way around. There's a nice balance between carefully crafted content and news items. It's a really fine site."

Developing a Template and Style Guide

This review is great news for the team that worked together to develop a style guide and template that help Laboratory groups present their message in a way that effectively marries content and form. As leader for the External Web project, Katherine Norskog explains, "Our goal is to make the Lab's external Web pages unified but with unique characteristics. Jonathan Thompson, the Lab's Division Director of Laboratory Communications and External Relations (CER) has charted a strong and unified institutional image and message. Within that framework, each group's site is useful, distinct, and well suited to the subject matter."

Developing pages that are unified, engaging, and easy to navigate makes it easy to tell the story of the Laboratory's scientific leadership and competence effectively. The pages are also helping to expand the Lab's recruiting efforts and extend its contacts nationally as well as internationally.

Telling the LANL Story

Katherine Norskog notes, "The best part of this redesign project was the enthusiasm and support given by the Laboratory's cross-divisional teams of managers and stakeholders anxious to create useful information for the public." Working closely with these teams and building on stories supplied by writers in the Laboratory's Public Affairs Office (PAO), these Web developers built portals with search and browse tools, news features, useful links, and public news releases. In addition, a calendar makes it possible to find and post technical and nontechnical events easily.

The next challenge the developers of these pages face is updating the content, improving the structure of the pages, and getting the pages ranked highly in search engines. A team that includes a writer from PAO and a Web developer from IM-1 works with the stakeholders to plan the content changes that will appear a minimum of once a month—though changing the information more often is desirable.

External Site Stakeholders

Focusing on several of the Laboratory external portals will give a clearer picture of the process involved in setting up the content and format of these sites.

Science and Technology

The Science and Technology portal, begun at the instigation of Bill Press, Deputy Laboratory Director for Science, Technology & Programs, now has a standing committee to advise on its evolution. Representatives come from the Laboratory Fellows as well as from the following directorates: Strategic and Supporting Research; Science, Technology & Programs; and Nuclear Weapons. Currently, the Science and Technology portal has a feature story on a scientific innovation and another feature on a scientist. There are useful links into the patent database, the Research Library, the *Los Alamos Science* two-volume publication, "Challenges in Plutonium Science," and a new awards database built by Science Technology Base (STB) Programs.

Life @ LANL

A stakeholder group for the page called, "Life @ LANL" pulled together useful information needed by external candidates interested in working at LANL. Sponsored by the Diversity Office (DVO) and the Human Resources (HR) Division, the Life@LANL site is a recruitment tool providing information on area schools, medical facilities, recreation, and culture. Chaired by Deborah Lee of HR-1 Compensation & Benefits, this team of representatives of DVO, HR, Environment Safety & Health (ESH) Division, PAO, and the Wellness Center designed this practical site. Deputy Director for Simulation, Applied Physics Division, Douglass Post comments on the usefulness of this portal:

> ***Colleagues at life@lanl.gov,***
>
> ***I am chairing the search committee for the next Computing, Communications, and Networking (CCN) division director. We are using a link to your Web site: http://www.lanl.gov/worldview/welcome/recreation.shtml as one of the ways prospective applicants can get information about the climate, topography, and recreational opportunities around Los Alamos.***

Employment

Karen Burkett of Staffing (HR-5) worked with team member Ann Peterson of IM-1 to create an exciting and informative Employment site. This portal makes it very easy to identify available University of California jobs, contract jobs, or student and postdoc positions. Interested applicants are then able to apply for a position online. Recruitment events, benefits, and FAQs are also posted on this portal.

International

In developing the International section, the stakeholder group, headed by Veronique Longmire from Industrial Business Development (IBD), was especially interested in providing the latest Laboratory information to the international community. Her group developed a new virtual version of the Laboratory's Handbook for Foreign Visitors, a publication last issued in 1985. The International site gives prospective Lab employees information on such diverse issues as immunization requirements for children and procedures for obtaining visas.

Education, Community, and Doing Business with LANL

Katherine Norskog says that dynamic stakeholder groups are responsible for the Education, Community, and Doing Business with LANL pages. Kurt Steinhaus, STB-Education Program Office, headed the team, and Johnnie Martinez, Community Relations Office, was the lead for the Community pages. Denise Derkacs, IBD, headed the stakeholder group for the Doing Business with LANL portal. These pages provide quick access to the world of small business opportunities, technology transfer, procurement, and jobs. Industrial Business Development lent the talents of Kathi Parker and Marjorie Mascheroni, both from IM-1, to organize content for the stakeholders on these pages.

Variations on the Web Site Format

The external Web team began its work with the Laboratory's Research Library and with the Library's own Web team, headed by Kathy Varjabedian. Designing the Library's site was a daunting task because there is so much information to include and so many different ways to organize that information. It is especially necessary to organize this vast amount of information so that the huge number of visitors to the site can easily find what they are seeking.

The Library conducted user testing, polling librarians across the country for feedback on the best ways to build the design and content of the site. The Laboratory's External Web team provided the Library with a site template, and the Library took the design from there. Because of the specific needs of the Library site, it looks a bit different from some of the other Laboratory pages.

Another Laboratory Web site that is sporting a variation from the format of the Laboratory template is the Bradbury Science Museum's site. External Web team member Laura Novak worked with the Museum to design that specific look, while still including some style consistency in the Museum pages. This site is geared especially to teachers, students, and in commenting on the special needs of the Museum, Laura explains that the Museum wanted its pages to reflect their position as part of the larger community and not just a standalone Laboratory group."

Balancing a Unique but Unified Style: More Future Integration

Last fall, External Web team member, Amy Parker devised the color, format, and navigational tool placement for the institutional pages based on the templates that are available to the entire Laboratory. Amy notes that "it is important to have a good balance between the look and the content of the Web sites. Now when a division calls wanting to have its Web site look like the external sites, the style guide helps them see that they can use the template and still be creative." Having worked with several divisions to design their sites, Amy hopes to further the consistency throughout the divisions because in designing the different sites, "We are looking at the process institutionally and looking at the big picture."

The Laboratory's team of External Web designers includes: Katherine Norskog, Kathi Parker, Amy Parker, Ann Peterson, Laura Novak, Chad Kieffer, Chris Lindberg, as well as Information Management (IM) programmers Leslie Morgeson, Jim Mottonen, and Allan Marcus. Writers from IM-1 who developed the site include Marjorie Mascheroni, Marv Wetovsky, and Nikki Goldman.

Communication: A Core Competency

by Ann Mauzy, Communication Arts and Services, IM-1

BITS interviewed Communication Arts and Services' information specialist Jim Cruz about his inspiration for a model to facilitate making communication a core competency at the Laboratory. "Everyone that I come in contact with at the Laboratory is concerned about the environment, security, and national missions," says Cruz, "They will do whatever they can to solve any problems that threaten those missions," he adds. "This resolve resonates with public concerns, but we (the Laboratory) don't do a very good job of communicating our mutual concerns." His vision for communication at the Laboratory is to make it an integral part of our reputation as a resource for leading-edge science and technology to solve problems. "Excellence in communication is part of living up to our responsibilities as members of the Lab team," Cruz says, "It's about bringing people together from diverse backgrounds and interests to solve national and global security problems. We need to communicate not only our heart-felt desire to do this, but also our successes in doing so."

He feels that the Laboratory needs to embrace communication as a "core competency." This includes more than publishing science or presenting posters. It includes using all means necessary to talk to our various audiences because they are ultimately the beneficiaries of our national and global missions. "Because we are those beneficiaries also," he adds, "it should not be a difficult concept to communicate."

Collaborative Spirit Alive

"I have this vision of the energy and dedication that initiated our missions through the Manhattan Project emerging once again at Los Alamos." says Cruz, "When you talk to people who participated in that original effort you get a sense of loss and nostalgia for the initiative and teaming that took place. It was a time of miracles and innovation—a time for all possibilities."

Cruz says this collaborative effort still exists here in small teams and projects, but it's not unified because of many factors. "I believe it is possible," he says, "to bring this unified mission, or essence of what the Laboratory is all about—our essence—back to everything we do. This is where communication becomes a core competency."

Cruz points out that this is not a novel concept. The "next" economy is already embracing ways of working that enable expertise from diverse interests and geographical locations to come together in collaborative projects to make success possible in phenomenally short periods of time. There is an essence to these teams that can solve any problem and empower all involved. "I like to call this collaboration for success "Miracle Time," says Cruz, "Miraculous things happen when people are working in synchronization toward a common mission and a common outcome. The recovery from the Cerro Grande fire is an example. Time after time outside agencies such as the BAER (Burned Area Emergency Rehabilitation) Team have said they have never seen such determination, cohesiveness, and success in such a short time.

Relevance to Problems under Lab Mission

Cruz believes Laboratory missions can be fulfilled only through mutual understanding and effort. He observes that when there is success at the Laboratory, there is always an underlying sense of collaboration or "empathy," if you will, towards the outcome. He notes that it doesn't matter what discipline people come from, or what organization. In successful endeavors there is an attitude or group identity that encourages everyone to work toward success.

Cruz believes that success frequently comes from finding creative and innovative ways of approaching problems through grass-roots efforts. "A good manager or leader will encourage this process, become involved with it, and do everything he/she can to support it."

Research Areas

"It does not take a lot of research to know how to determine if a project is progressing forward or backward, or if there is effective communication among all concerned," Cruz says, "The relevant questions just need to be asked all along the problem-solving process."

Research into diversity issues within project teams and organizations, communication flow within organizations, and audience analysis techniques would provide insights into the dynamics of organizational success. Using established parameters to model communication effectiveness could be helpful to the project leader and add to project effectiveness.

Cruz has developed a communication model based on cultural tiers within an organization, the interaction between those tiers, and results or success indicators. It models the multidimensional process of communication in an organization. See Fig. 1.

Communication Model with Examples

Figure 2 shows two examples of the communication and production flow within an organization in several dimensions. Communication flows vertically up or down (y-axis) from the top tier or upper-management level of responsibilities and deliverables to the lower tier or workforce. Communication can also flow laterally (z-axis) within each of the tiers. This lateral flow describes the correlation between job responsibilities, objectives, and budget responsibilities. Organizational productivity (x-axis) moves towards deliverables or mission accomplishment.

Example 1: Cerro Grande Wildfire Web Initiative

Applying the model to the Lab's Web efforts associated with the Cerro Grande wildfire allows us to see a communication productivity flow as a grass-roots initiative. (See Fig. 2.) Because of the communication competency of the Web team composed of workers from IM and CCN Divisions (the former CIC Division) and several other Lab and community collaborators, there is a strong connection between organizational deliverables and workforce responsibilities. (1) In the Cerro Grande fire emergency there was no hesitation from the Web team, even during the evacuation, to understand and communicate recovery information. (2) This effort involved integrating internal and external expertise into the Web team to solve the problems of posting vital information on the Laboratory's Web site. It also involved creating a communication process to feed information into the team from diverse information sources. (3) Once the upper management tier had regrouped and began meeting, the Web team was invited to the meetings to report.

Example 2: American Physical Society Conference

The model can be applied to another Laboratory project—the Laboratory's presence at the American Physical Society's annual conference in Atlanta in 1999. (See Fig. 3.) (1) This time the communication flow began from the upper management tier (Director's office) and continued to move down through the Laboratory organization to the middle management tier (Physics Division Office) and then to the workforce tier (IM-1). With only three weeks before the conference, the request was to produce a simple "poster." (2) Again, because of the strong communication/productivity links between the workforce tier and the Laboratory mission, IM-1 was able to redefine the original request to a communication product that was more appropriate for audience needs and requirements, i.e., the Laboratory needed to demonstrate its dedication to national and global missions. (3) In three weeks the communication team produced a 30-minute video, an 8' x 10' display, a poster handout, a brochure of Laboratory presentations at the conference, an interactive kiosk, and a Web site that presented collaborative efforts at scientific excellence and dedication. The team also coordinated a Laboratory reception and booth in the exhibit hall. Questions from conference attendees were answered from a prepared script based on interviews with the principal investigators.

Further research would develop this model as a visualization technique for communication/productivity effectiveness. Applying numerical parameters to the communication links vertically between each of the tiers, laterally within each tier, and to productivity flow would produce a visual simulation or picture of organizational effectiveness. A project manager would be able to locate problem areas in the organization or communication culture.

Integration with Other Efforts

Cruz says there are current models of effective communication strategies that work. These can be found not only in private industry, but also in government organizations. He adds that we can learn from these organizations through collaborations and advisory committees.

For example Motorola has a Web-based survey tool that employees can access from anywhere in the world. It gathers simple data that provides a snapshot of what employees need from the upper tiers as well as other things they need to remain productive and effective.

The Indus Group, a software development company, uses an electronic reporting system to record confidentially the "pulse" of how employees view the organizational climate on a 10-point scale, from frazzled to relaxed.

The complexity of Cruz' projects and experience with a variety of clients has challenged him to supplement this model with four personal design principles:

To ensure the ongoing success of a communication product, it must be

1. unique and stand on its own,
2. ready to change direction at a moments' notice,
3. prepared to be cut off at anytime, and
4. inclusive of all who may be concerned with its message.

The Laboratory community involves a diverse set of audiences and needs. Cruz feels we can serve these audiences and fulfill these needs by answering the questions, "What are the traits of successful communities and organizations? How can they be adapted to our unique organizational needs and requirements?"

Issues

Issues for developing communication as a core competency at the Laboratory are diverse and complex. The cultural and scientific diversity within the Lab community presents formidable challenges in developing mutual understanding and collaboration.

Cruz points out that there are negative forces that can potentially divide us, such as a competitive atmosphere populated with diverse and critical thinkers who tend to think in terms of scientific method. These forces are, ironically, a testimonial to our excellence and initiative that enable us to rise to the occasion when global demands are presented. To meet these demands we have built self-directed teams that pursue success. The teams have grown into effective organizations, but unfortunately such organizations have a hard time relating to each other because of competition for institutional and programmatic funding.

As a "core competency," focused communication between and within organizations will help us pull in the same direction to succeed in our missions. As we do so, better communication of our successes should result in more collaborative efforts, enhanced ability to succeed, and increased funding. "Results come," Cruz concludes, "from a clear vision, presented to the right audience, at the right time, and focused through dynamic and well crafted communication by caring for your target audiences and their respective needs."

PRODUCTIVITY COMPONENTS	ORGANIZATIONAL RESPONSIBILITIES	ORGANIZATIONAL DELIVERABLES
TIER 1: UPPER MANAGEMENT		
Cost-Effectiveness Timeliness Purpose	Acquire Funding Plan Strategically Oversee Institution	Adequate Funding Accomplished Mission Organization Unified
TIER 2: MIDDLE MANAGEMENT		
Cost-Effectiveness Timeliness Purpose	Allocate Budgets Plan Objectives Manage Organization	Projections Met Objectives Integrated Objectives Translated
TIER 3: THE WORKFORCE		
Cost-Effectiveness Timeliness Purpose	Project Budgets Manage Projects Apply Skill and Knowledge	Budgets Met Schedules Met Targets Met

COMMUNICATION

PRODUCTIVITY

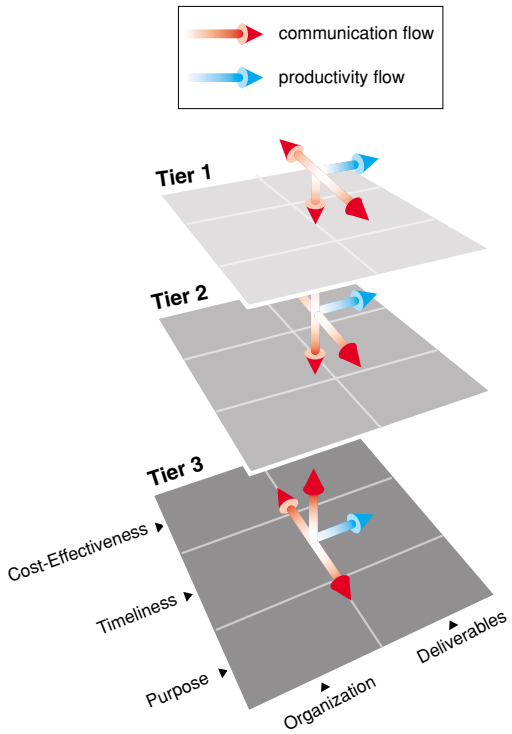


Fig. 1. Communication model showing the communication flow within an organization in several dimensions. Communication flows vertically up and down between the top tier or upper management to the lower tier or workforce. Communication can also flow laterally within each of the tiers between the productivity components: cost effectiveness, timeliness, and purpose. Organizational responsibilities keep productivity moving towards targeted deliverables.

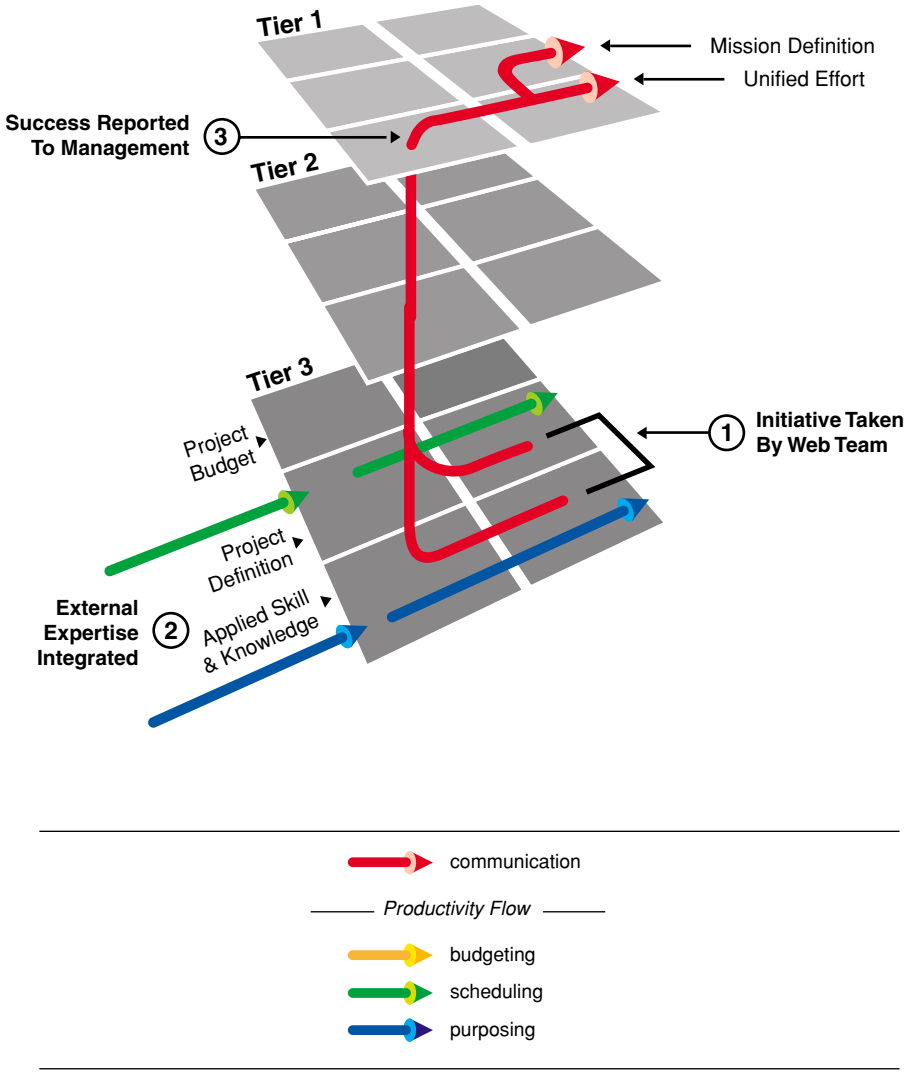


Fig. 2. This figure shows the application of the communication model to the Laboratory's Web team efforts associated with the Cerro Grande wildfire in May 2000. [1] In the Cerro Grande fire emergency there was no hesitation from the Web team, even during the evacuation, to understand and communicate recovery information. [2] This effort involved integrating internal and external expertise into the Web team to solve the problems of posting vital information on the LANL Web site. It also involved creating a communication process to feed information into the team from diverse information sources. [3] Once the upper-management tier had regrouped and began meeting, the Web team was invited to the meetings to report.

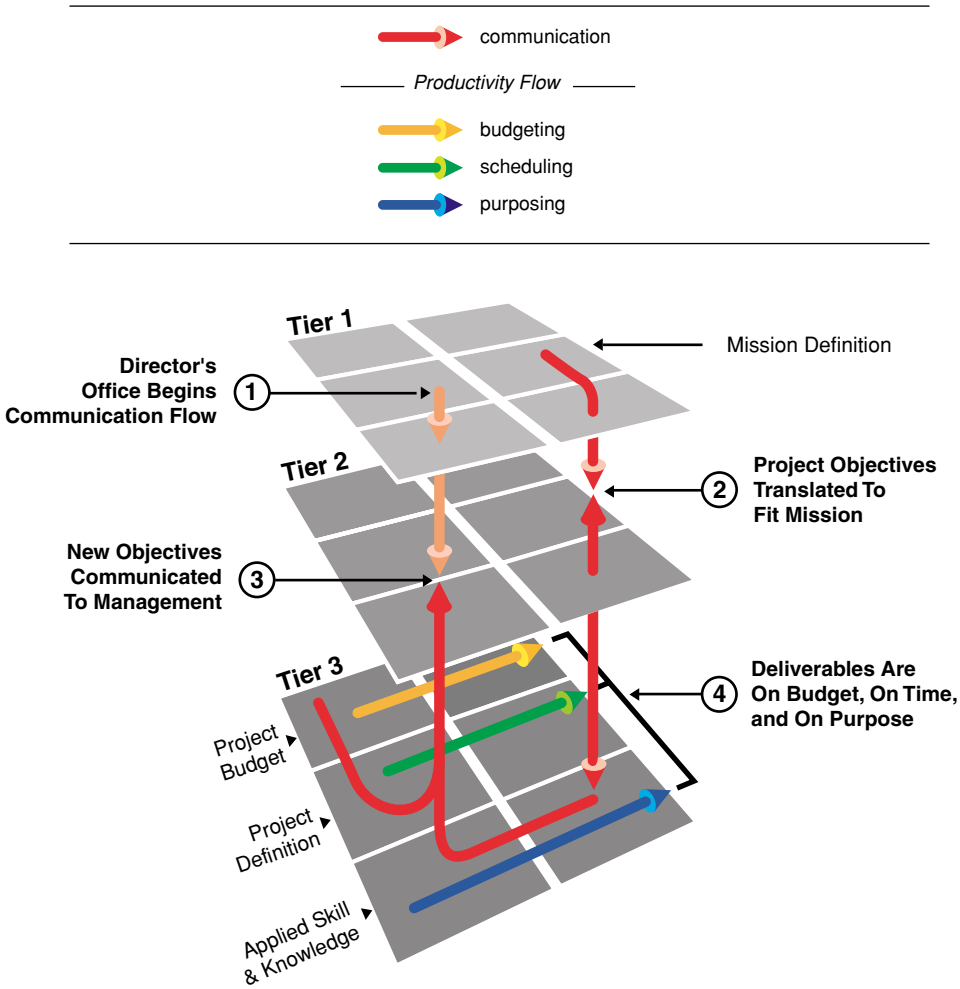


Fig. 3. This figure shows the application of the communication model to the Laboratory's presence at the American Physical Society's annual conference in Atlanta in 1999. [1] The communication flow began from the upper management tier (Director's office) and continued to move down through the Laboratory organization to the middle management tier (Physics Division office) and then to the workforce tier (IM-1). With only three weeks before the conference, the request was to produce a simple "poster." [2] Because of the strong communication/productivity links between the workforce tier and the Laboratory mission, IM-1 was able to redefine the original request to a communication product that was more appropriate for the audience needs and requirements. The Laboratory needed to demonstrate its dedication to national and global missions. [3] In three weeks the communication team produced a 30-minute video, an 8' x 10' display, a poster handout, a brochure of LANL presentations at the conference, an interactive kiosk, and a Website that presented collaborative efforts at scientific excellence and dedication. The communication team also coordinated a LANL reception and booth in the exhibit hall. The team answered conference attendees' questions using scripts prepared by interviewing principal investigators.

Proposed Standard for Web Site Usability Testing

by Denise Sessions, Communication Arts and Services, IM-1

Usability tests test how easily users can accomplish their goals by measuring specific characteristics of a Web site, including efficiency of use and error frequency and severity. The Information Architecture (IA) project, soon to propose a standard for Web site usability testing as a Request for Comment (RFC), recommends usability testing of Web sites as good practice.

Many people are under the impression that usability testing is involved and time consuming. Actually, it can be fast and simple. Conducting a test with just five users for about one hour each reveals about 80% of the usability problems with the main functions of a site or application. Consider Jakob Nielsen's comments about usability testing:

There is only one valid way to gather usability data: observe real users as they use your site to accomplish real tasks. This is actually the simplest of all the methods: just see what happens!

Having a usability expert review the site against usability guidelines that you have determined can help, but it is limited because the guidelines are limited. You won't find most problems unless you conduct a test.

Of course, the real benefit is in the cost savings. If you can identify 80% of the usability problems before coding the application or developing the entire site, you can save a bundle. The cost of fixing usability problems in the design phase is about 10% of what it costs when the site is complete. And that doesn't take into account the costs of supporting users who need assistance.

Getting the Information Requires a Little Planning

The proposed standard, written jointly by the Laboratory's Enterprise Information Infrastructure (IM-3) Group's user interface designer Kym Kittell and IM-1's technical writer-editor Sheila Molony, is a very useful document. The proposed standard includes a list of steps to plan and conduct a usability test. One of the steps is to apply for approval by the Laboratory's Institutional Review Board for Human Subjects Research as specified by the Department of Energy. The proposed standard will include a "fillable" form for applying to the Review Board. Steps for planning and conducting a usability test are listed below.

1. Define the purpose of the usability test.
2. Identify specific concerns about the Web site.
3. Identify the target users of Web site.
4. Define the usability goals for the test.
5. Create tasks that address your concerns and usability goals.
6. Identify any other materials you will use during the test (e.g., satisfaction survey).
7. Complete the Application to Conduct Usability Evaluation (allow 2 days for approval).
8. Plan test place and dates.
9. Find, schedule, and confirm participants.
10. Conduct the test (after getting approval).
11. Review problems identified during test and revise Web site.
12. Repeat steps 10 and 11 as needed.
13. Complete the Final Report of Usability Evaluation.
14. Complete and enjoy improved Web site!

A Web link in the proposed standard provides a detailed explanation for each step. Another Web link gives the Usability Test Plan for the Laboratory Information Architecture Web Site as a sample for first-time usability study planners.

Small Time Investment for Big Cost-Benefit Ratio

The proposed standard includes the following convincing rationale.

Studies have shown that it takes about 39 hours to conduct a usability test of a Web site the first time you try. (See Cost of User Testing a Web Site by Jakob Nielsen.) This estimate includes planning the test, defining test tasks, recruiting test

users, conducting a test with five users, analyzing the results, and writing the report. With experience, Web usability tests can be completed in two work days. This small investment in time means that anyone can learn to conduct a usability test.

The rule of thumb in many usability-aware organizations is that the cost-benefit ratio for usability is $1:$10-$100, that is, for every dollar spent implementing usability techniques, the organization will realize a benefit between $10 and $100.

Usability and Evaluation Resources

IM-1 offers a wealth of usability testing and evaluation resources (related Web links) at http://int.lanl.gov/resources/usability.shtml. Evaluation activities such as usability testing and satisfaction surveys help prevent site problems and complaints. Evaluation alone is not sufficient to improve a site. After identifying problems, Web developers must correct identified problems. In addition, continuous periodic reviews of the site, and user comments are essential to keeping a site usable.

To stay in touch with the latest information available to Web developers at the Laboratory, watch for the announcement on the Lab's internal home page that the RFC is online. After the Laboratory community has a chance to submit comments, the IA project will either approve the standard as written, approve it with revisions, revise it and reissue it for further comment, or withdraw it. If you miss the Lab home page announcement, simply log on to the IA Web site (http://www.lanl.gov/projects/ia/) and look under "News."

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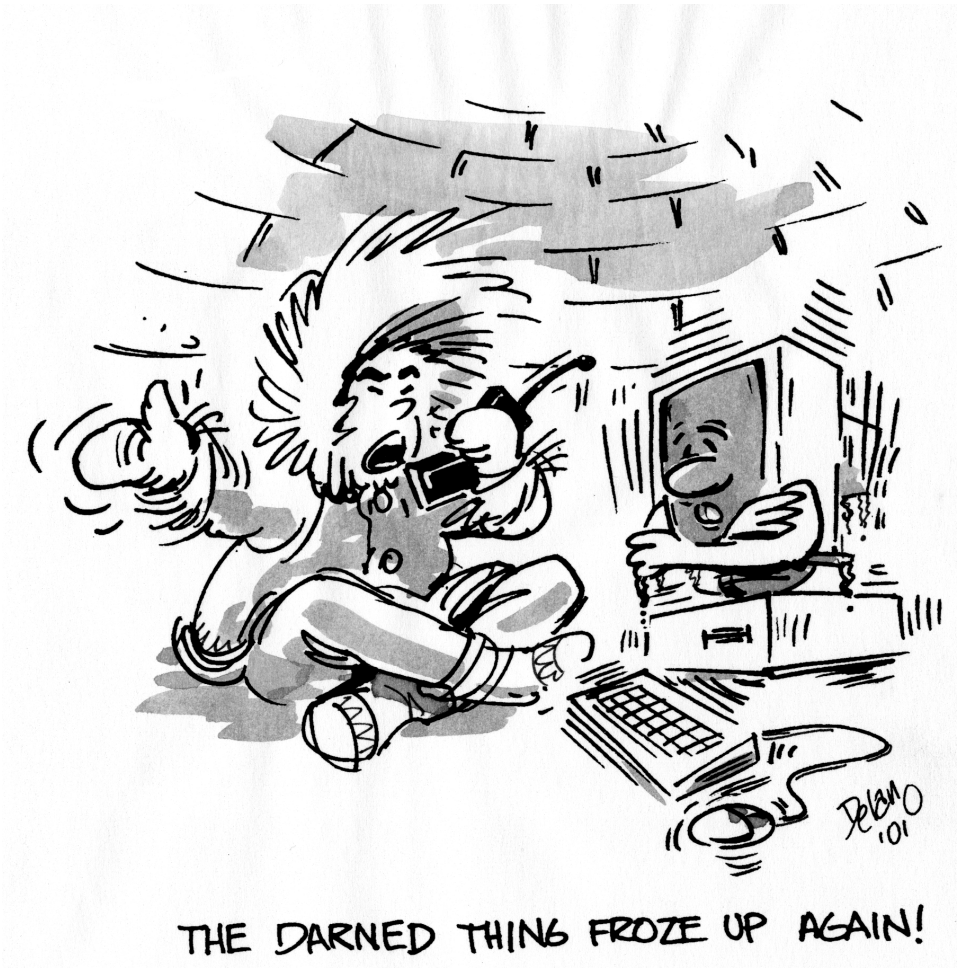
[1]Jakob Nielsen's Alertbox, "Voodoo Usability," December 12, 1999, http://www.useit.com/alertbox/991212.html .

[2]Jakob Nielsen's Alertbox, "Cost of User Testing a Web Site," May 3, 1998, http://www.useit.com/alertbox/980503.html .

[3]Gilb, T., Principles of Software Engineering Management, (Addison Wesley, Reading, MA) 1988.



LALP Submittal Form Now Online

by Judy Prono, Communication Arts and Services, IM-1

The "Blue Sheet" is history. The submittal form for LALPs (Los Alamos Laboratory Publications) is now available online as a fillable PDF file. Not only its color, but also its name and number have changed. The new online form, called simply the LALP Submittal, is form 1822 and is available on the EIA Online Forms Web page for publications (http://enterprise.lanl.gov/publica.htm).

The new LALP Submittal replaces the old Publication and Communication Request (form 895) that was printed on blue paper and was available only as a stock item. The new electronic form has also been "streamlined" in that DOE and color approvals are no longer required for printing LALPs. Authors need only specify the nature, audience, and purpose of their publication and the number of copies to be printed. They then print a copy of the submittal form and send it with a draft of their publication to the Classification group (S-7). S-7 will assign an LALP number as part of its review and release process.

LALP numbers are given to a variety of public relations materials distributed by the Lab. Often intended for nontechnical audiences including the public, LALPs include capability brochures, fliers, newsletters, conference announcements, exhibits, and posters. For more information about the series, see the Lab's online publications manual, Publishing at Los Alamos (http://int.lanl.gov/publishing/). The manual explains the submittal process, distribution guidelines, and required publication elements

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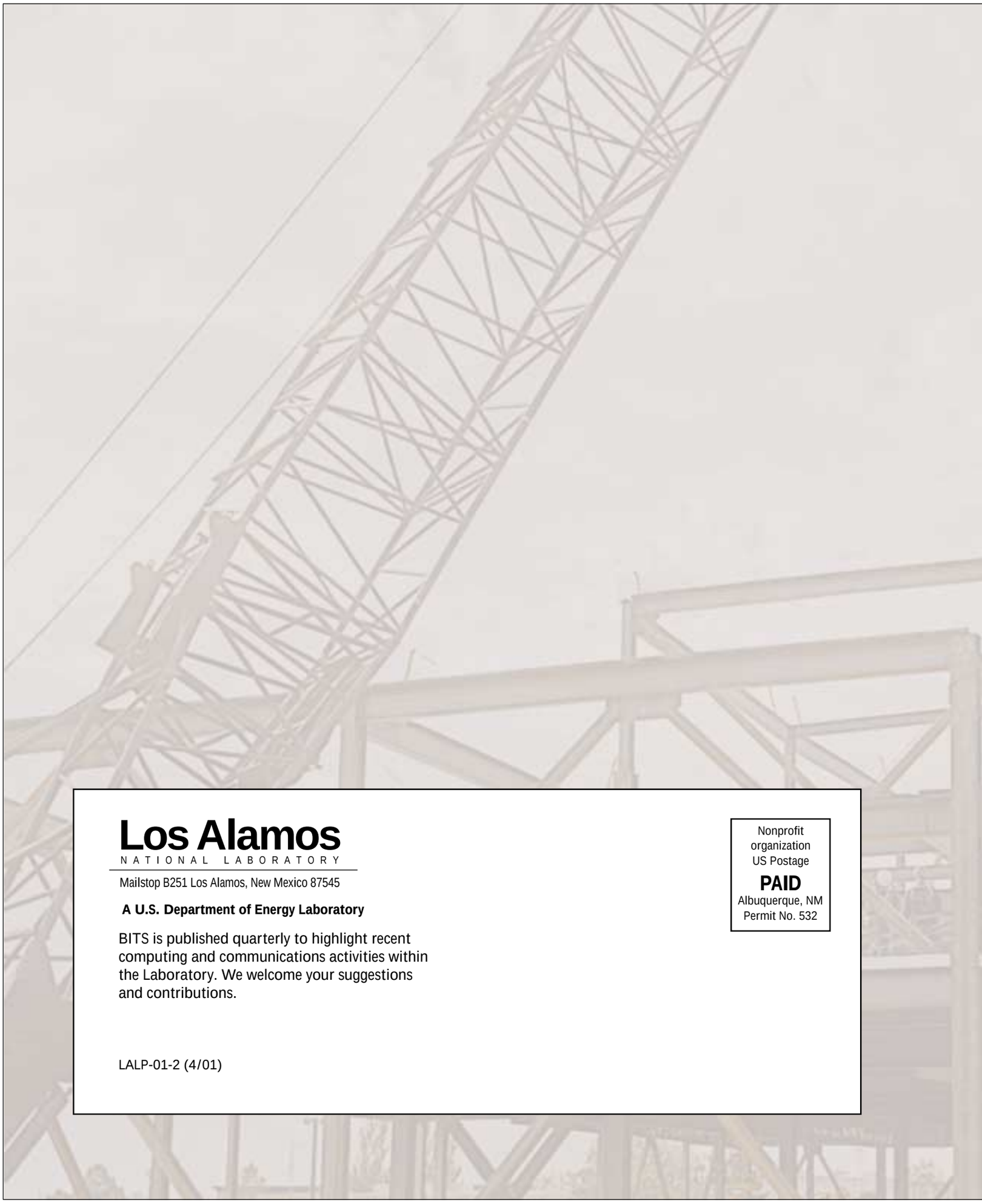

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